UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,444	01/10/2002	Hubbert Smith	PW 0249739 P12831	8611

7590 07/17/2006	EXAMINER
Pillsbury Winthrop LLP Intellectual Property Group Suite 2800 725 South Figueroa Street Los Angeles, CA 90017-5406	HIGA, BRENDAN Y

ART UNIT	PAPER NUMBER
2153	

DATE MAILED: 07/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/044,444	SMITH, HUBBERT
	Examiner	Art Unit	
	Brendan Y. Higa	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *10 January 2002*.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-28* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-28* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *10 January 2002* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   This communication is in response to the application filed on January 10, 2002.

Claims 1-28 are pending.

Priority

2.   No claim for priority has been made in this application.

3.   The effective filing date for the subject matter defined in the pending claims in

this application is January 10, 2002.

Drawings

4.   The Examiner contends that the drawings submitted on January 10, 2002 are

acceptable for examination proceedings.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form

the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   Claims 9-11, 13, and 14 are rejected under 35 U.S.C. 102(e) as being anticipated

by Stone (US 6823382).

6.   As per claim 9, Stone teaches an input/output processor (local agent, Fig. 2, ref.

44 and 45, col. 4, lines 56-63) for a system within a network cluster (server farm, Fig. 1,

col. 3, lines 13-15), comprising: a health monitoring and heartbeat logic circuit to

monitor the system and to generate a system down message when the system is down

(col. 5, lines 44-64); a failure/recovery logic circuit to designate a status of the system

and to allow the system to take over for a failed system (col. 4, lines 14-24); a cluster

node add/remove logic circuit to allow addition or removal of systems without taking the

network cluster offline (col. 6, lines 1-6); and a cluster membership discovery/reconcile

logic circuit to establish the network cluster and to ensure cluster failover support for the

systems within the network cluster (col. 4, lines 15-18 and col. 49-56).

7.   As per claims 10 and 11, Stone further teaches wherein the system is a server

system and a storage array (see Fig. 2, col. 4, lines 31-63, wherein the local agents

resides in a Web Server, Fig. 2, ref. 20, Application Server, Fig. 2, ref. 30, or Database,

Fig. 2, ref. 40)

8.   As per claim 13, Stone further teaches data and the system down message are

transmitted to and from the input/output processor (local agents) travel along a

connection between the input/output processor and a second input/output processor of

a second system (node monitor, Fig. 12, ref. 48, col. 5, lines 59-64 and lines 15-21,

wherein the local agent notifies the service agent of a system failure via the node

monitor, read as a second input/output processor of a second system).

9.   As per claim 14, Stone further teaches the status is selected from the group

consisting of active ("heartbeat messages", col. 9, lines 18-22), failed (col. 5, line 59-

64), recovered (restarted, col. 10, lines 33-52), and standby (back up server, col. 9,

lines 49-56).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the

claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the

various claims was commonly owned at the time any inventions covered therein were

made absent any evidence to the contrary. Applicant is advised of the obligation under

37 CFR 1.56 to point out the inventor and invention dates of each claim that was not

commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

10.   Claim 15 is rejected under 35 U.S.C. 103(a) as being obvious over Stone (US

6823382), in view of Shek et al. (US 6185652), hereafter referred to as Shek.

11.   As per claim 15, Stone teaches the invention substantially as claimed as noted

above. However, Stone does not expressly teach the input/output processor running on

a real-time operating system (RTOS).

However, in the same art of remote data accessing, Shek teaches a real-time interrupt

architecture running a real-time operating systems (RTOS) (col. 1, lines 22-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention

to modify Stone's invention to include a real-time operating system in order to provide

better system performance that is far superior to that of a non-realtime system (Shek et

al.: col. 1, lines 31-42)

12.   Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stone

(US 6823382) in view of Lamberton et al. (US 6931452), hereafter referred to as

Lamberton.

13.   As per claim 12, Stone teaches the invention substantially as claimed as noted above. However, Stone does not expressly teach the system running the local agent being a storage router.

However, in the same art of computer network monitoring, Lamberton teaches a method of monitoring and determining the availability of candidate routers in a cluster network (see abstract, col. 2, lines 9-20, and col. 2, line 63 – col. 3, line 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the local agent within a router in order to provide surrounding routers connected to a failed router with a means for quickly detecting availability problems in the network.

14.   Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stone (US 6823382) in view of Bruck et al. (US 6088330), hereafter referred to as Bruck.

15.   As per claim 16, Stone teaches the invention substantially as claimed as noted above. However, Stone does not expressly teach the system (Database, Application, or Web Server, Fig. 2) to which the local agent (Fig. 2, ref. 41, 42) (read as an input/output processor according to claim 9) is connected to including a cluster management information base (MIB) that is accessible to local agent.

However, in the same art as computer network monitoring, Bruck teaches a robust distributed server system, wherein each node in the distributed server system contains

a net monitor (NETM) which maintains a connectivity chart (read as a cluster MIB) for monitoring all connections paths from the local node to each remote node at all times (see col. 10, lines 55-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention, to modify the system running the local agent of Stone's invention (see Fig. 2) with the connectivity chart presented by Bruck in order to provide the local agent with a means for monitoring the status of all possible connections between the system containing the local agent to the other systems in the server farm (Bruck: col. 10, lines 56-65).

16.   Claims 1-4, 7,17-22, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruck (US 6088330) in view of Stone (US 6823382), in further view of Lamberton (US 6931452).

17.   As per claim 1, Bruck teaches a network system, comprising: a server system (Fig. 3, ref. 300), a storage array (Fig. 3, ref. 302) (see col. 2, lines 5-10, wherein each node corresponds to a server element storing information), and a storage router (switching node, Fig. 3, ref. 320) the server system and the storage array each have a cluster management information base (MIB) (col. 3, lines 23- 46, and col. 10, lines 56-65, wherein each node in the network has a network monitor containing a connectivity chart, col. 10, line 63-66, read as a cluster MIB) Furthermore, Bruck teaches the server

system and the storage array each have a cluster management information base (MIB) (connectivity chart, col. 10, lines 56-65).

As per claim 17, Bruck further teaches a second storage array (Fig. 3, ref. 312), a second server system (Fig. 3, ref. 312); the storage router (Fig. 3, ref. 318) being connected to the first server system, the second server system, the first storage array, and the second storage array (see Fig. 3); and the first server system, the second server system, the first storage array, and the second storage array having a cluster management information base (MIB) (connectivity chart, col. 10, lines 56-65).

Although, Bruck teaches each of the nodes (read as the server systems and storage arrays) in the network having a network monitoring element (NETM) for sending messages ("heartbeats") for determining the availability of other nodes in the network (see col. 11, lines 20-50), Bruck does not expressly teach the storage array and the server system having an input/output processor for issuing server down message.

However, in the same art of cluster network and computer network monitoring, Stone, teaches a local agent (Fig. 2, ref. 44 and 45, col. 4, lines 56-63) running on a server machine for collecting local status information and transmitting failure messages to service agents (Fig. 2, ref. 47) in a computer network when the local agent detects a service component or dependent software process failure in the server machine (see col. 5, lines 44-64).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the network monitoring elements taught by Bruck (col. 11, lines 20-50) with

the local agent processes taught by Stone for transmitting failure messages when a

local process running on a server machine fails in order to provide surrounding nodes

connected to the failed server machine with a means for quickly detecting availability

problems in the network (Stone: col. 12, lines 26-30)

The combination of Bruck and Stone teaches the invention substantially as claimed as

noted above. However, Bruck in view of Stone does not expressly teach the system

running the local agent being a storage router.

However, in the same art of computer network monitoring, Lamberton teaches a method

of monitoring and determining the availability of candidate routers in a cluster network

(see abstract, col. 2, lines 9-20, and col. 2, line 63 – col. 3, line 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention

to include the local agent within the switching node (Bruck: Fig. 3, ref. 320) presented

by the combination of Bruck and Stone, in order to provide surrounding nodes

connected to the failed router with a means for quickly detecting availability problems in

the network.

18.   As per claims 2-3, and 18-21, the combination of Bruck, Stone, and Lamberton

teach the invention substantially as claimed as noted above. Furthermore, the

combination of Bruck, Stone and Lamberton teaches the data transmitted to and from

the first server system (Bruck: Fig. 3, ref. 300), the second server system (Fig. 3, ref.

312), the first server array (Fig. 3, ref. 302), and the second server array (Fig. 3, ref.

318) and the server down message travel along a connection with the storage router

(Fig. 3, ref. 320) (Bruck: Fig. 3, and col. 5, lines 18-29)

19.   As per claim 4 and 22, the combination of Bruck, Stone, and Lamberton teach

the invention substantially as claimed as noted above. Furthermore, the combination of

Bruck, Stone and Lamberton teaches the first server system, the first storage array, the

second server system, and the second storage array being members of a network

cluster (Bruck, col. 6, lines 28-40, and col. 10, lines 5-14).

20.   As per claim 7 and 27, the combination of Bruck, Stone, and Lamberton teach

the invention substantially as claimed as noted above. Furthermore, the combination of

Bruck, Stone, and Lamberton teaches the storage router further including a second

storage router input/output processor (Bruck: see Fig. 3, ref. 320, col. 3, lines 48-60,

wherein the switch 112 is connected to multiple nodes in the network, also see col. 1,

lines 50-56, wherein Bruck teaches each node having multiple Ethernet connections),

the storage router input/output processor (Fig. 3, ref. 320) being in communication with

the server input/output processor (Fig. 3, ref. 300), and the second router input/output

processor being in communication with the storage array input/output processor (Fig. 3,

ref. 302) (Bruck: Fig. 3, and col. 5, lines 18-29).

As per claim 27, Bruck further teaches the storage router input/output processor (Fig. 3,

ref. 320) being in communication with the first server input/output processor (Fig. 3, ref.

300) and the second server input/output processor (Fig. 3, ref. 312), and the second

router input/output processor being in communication with the first storage array

input/output processor (Fig. 3, ref. 302) and the second storage array input/output

processor (Fig. 3, ref. 318) (Bruck: Fig. 3, and col. 5, lines 18-29).

21.   Claims 5-6 and 23-26 are rejected under 35 U.S.C. 103(a) as being obvious over

Bruck (US 6088330), in view of Stone (US 6823382), in view of Lamberton (US

6931452), in further view of Pham et al. (US 2003/0105830) hereafter referred to as

Pham.

22.   As per claims 5-6 and 23-26 the combination of Bruck, Stone, and Lamberton

teach the invention substantially as claimed as noted above. However, the combination

of Bruck, Stone and Lamberton fails to teach the server systems and storage arrays

being connected to the storage router via a Gig-Ethernet Internet Small Computer

System Interface (iSCSI) connection.

However, in the same art of computer network management, Pham teaches a computer

network for accessing a storage system running an iSCSI protocol as the basis for

network storage data transfers ([0045]).

It would have been obvious to one of ordinary skill in the art at the time of the invention

to modify the combination of Bruck, Stone, and Lamberton to utilize the iSCSI protocol

in order to obtain a reliable storage data transport over a conventional TCP/IP network

while combining the benefits of IP remote transport and the reliable quality of server

provided by the TCP protocol (Pham [0008]).

23.   Claims 8 and 28 are rejected under 35 U.S.C. 103(a) as being obvious over

Bruck (US 6088330), in view of Stone (US 6823382), in view of Lamberton (US

6931452), in further view of Shek (US 6185652).

24.   As per claim 8 and 28, the combination of Bruck, Stone, and Lamberton teach

the invention substantially as claimed as noted above. The combination of Bruck, Stone,

and Lamberton fails to teach the first and server input/output processor and the first and

second storage array input/output processor running on a real-time operating system

(RTOS).

However, in the same art of remote data accessing, Shek teaches a real-time interrupt

architecture running a real-time operating systems (RTOS) (col. 1, lines 22-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention

to modify the combination of Bruck, Stone, and Lamberton to include a real-time

operating system in order to provide better system performance that is far superior to

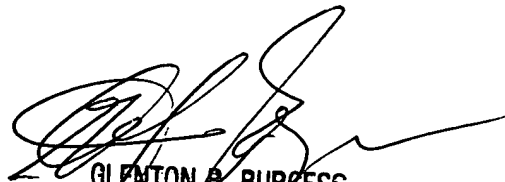that of a non-realtime system (Shek: col. 1, lines 31-42).

Conclusion

25.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brendan Y. Higa whose telephone number is (571)272-5823. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached on (571)272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BYH

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